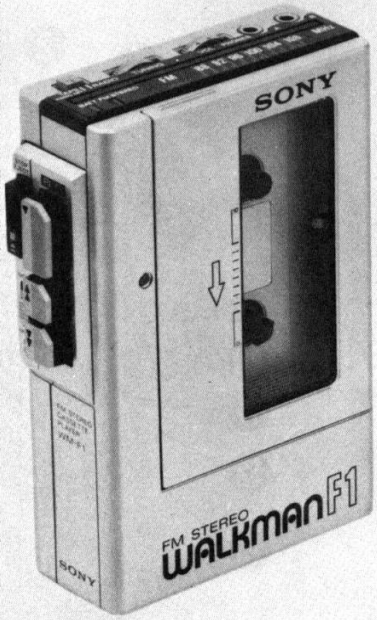
WM-F1

US Model
Canadian Model
AEP Model
UK Model
E Model



FM STEREO CASSETTE PLAYER

SPECIFICATIONS

Radio section

Frequency range: FM: 87.5—108 MHz
Antenna: Headphone cord antenna

Cassette player section and general

Tape track: 4-track 2-channel stereo
Fast winding time: Approx. 2 min. with Sony cassette C-60
Frequency response: 40—16,000Hz (with Sony METALLIC cassette, with the PB EQ selector set to METAL)
40—14,000Hz (with standard cassette, with the PB EQ selector set to NORM)
Power output: 30 mW x 2 (at 10% harmonic distortion) at dc operation
Output: Headphones jacks (stereo minijack). 2
load impedance 8—300 ohms
Power requirements: 6 V dc, four batteries, IEC designation R6 (size AA)
DC IN 6 V jack accepts
AC power adaptor. Refer to the following chart to choose the correct adaptor for your area.
car battery cord (optional)
DCC-127A for use with 12 V car battery
Battery life (continuous playback hours)
Approx. 5.5 hours with supplied Sony SUM-3(NS) New Super batteries or Eveready No. 1215 Heavy Duty batteries
Approx. 11 hours with Eveready No. E91 Alkaline batteries
For maximum performance we recommend the use of alkaline batteries.
Dimensions: Approx. 87.5 x 142.5 x 36 mm (w/h/d) (3 1/2 x 5 5/8 x 1 7/16 inches)
not incl. projecting parts and controls
Weight: Approx. 450 g (15.9 oz) incl. batteries, not incl. other accessories

0dB=0.775V

Country	AC power line voltage	Optional ac power adaptor
US	120 V ac, 60 Hz	AC-9W available
Canadian	120 V ac, 60 Hz	AC-9 available in
UK	240 V ac, 50 Hz	AC-15A available
AEP	220 V ac, 50 Hz	AC-122 available
E	110, 120, 220 or 240 V ac, adjustable, 50/60 Hz	AC-4A available

Tape Transport Mechanism Type	MT-WMFI-05

MICROFILM

SONY

SERVICE MANUAL

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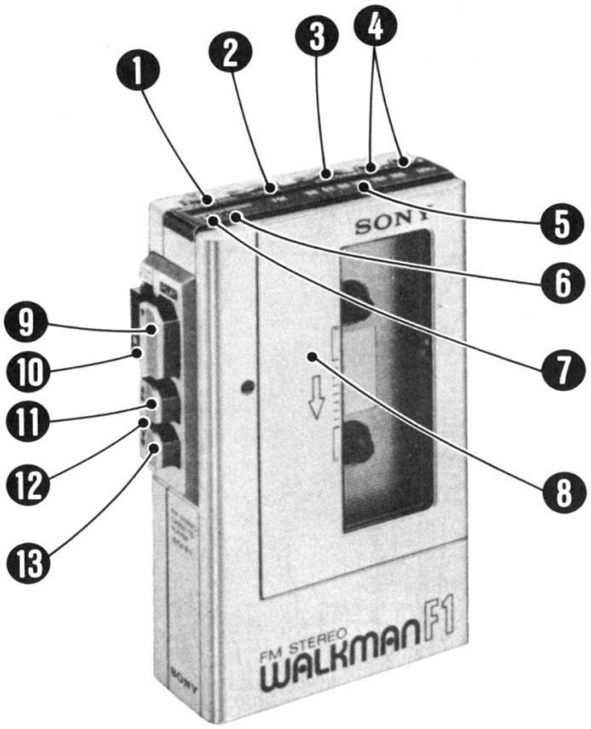
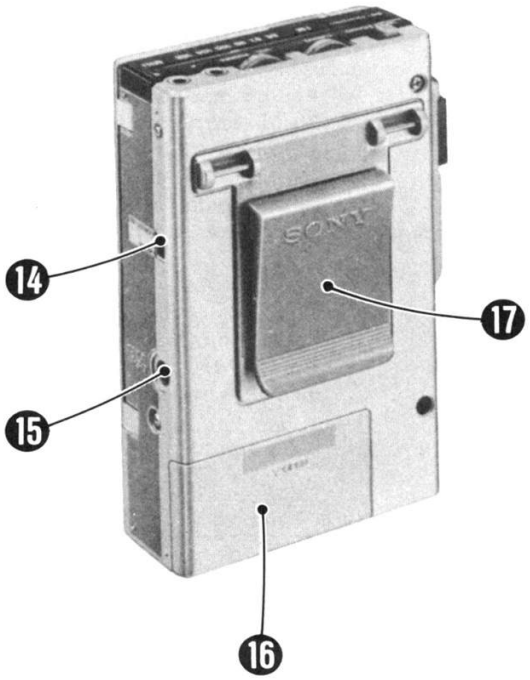
PARTS IDENTIFICATION

1. Function selector
2. TUNING knob
3. VOL (volume) control
4. PHONES (headphones) jacks (stereo minijacks)
5. Dial scale
6. FM STEREO indicator
7. BATT (battery) indicator
8. Cassette compartment
9. ▼ PLAY (playback) button
10. ■ STOP / ⏏ EJECT button
11. ⏫ (rewind/review) button
12. PB EQ (playback equalizer) selector
13. ⏬ (fast forward/cue) button
14. STEREO/MONO selector (UK, E, AEP MODEL)
14. DX/LOCAL selector (US, Canadian MODEL)
15. DC IN 6V (external power input) jack
16. Battery compartment
17. Clip (rear)
18. Stereo headphones (supplied)





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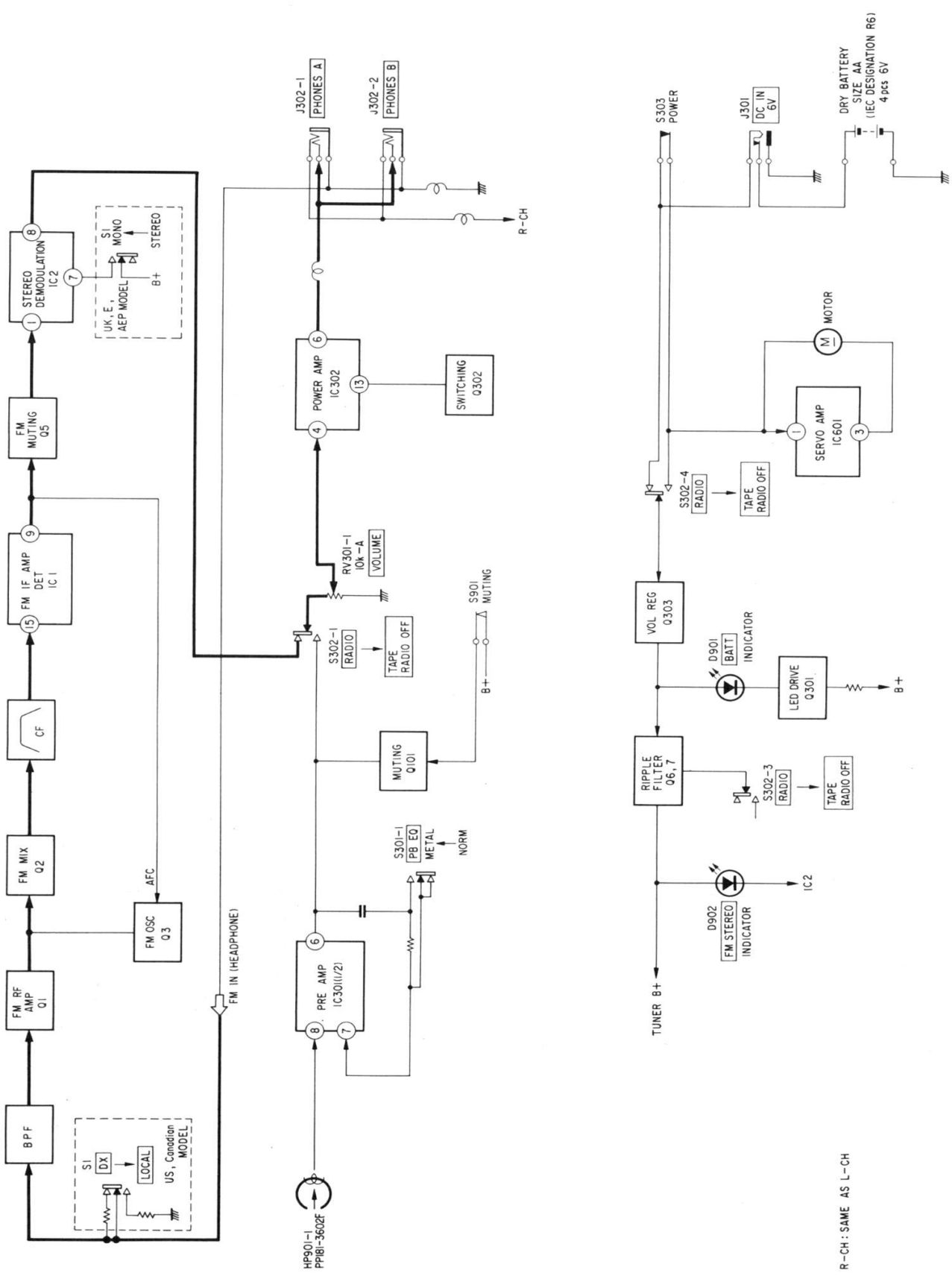
SECTION 1
OUTLINE

1-1. BLOCK DIAGRAM



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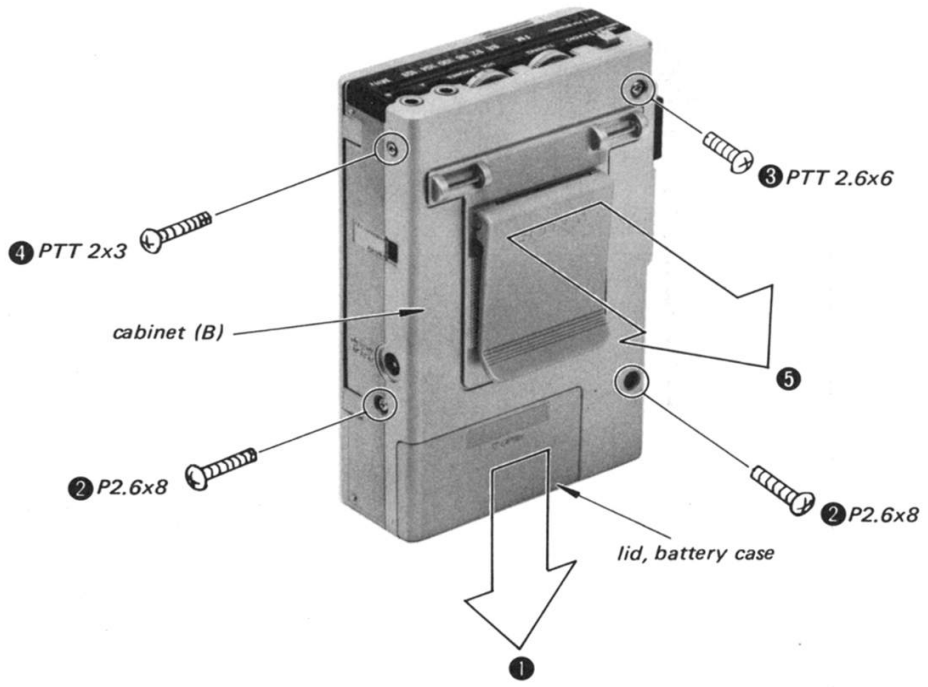
SECTION 2
DISASSEMBLY

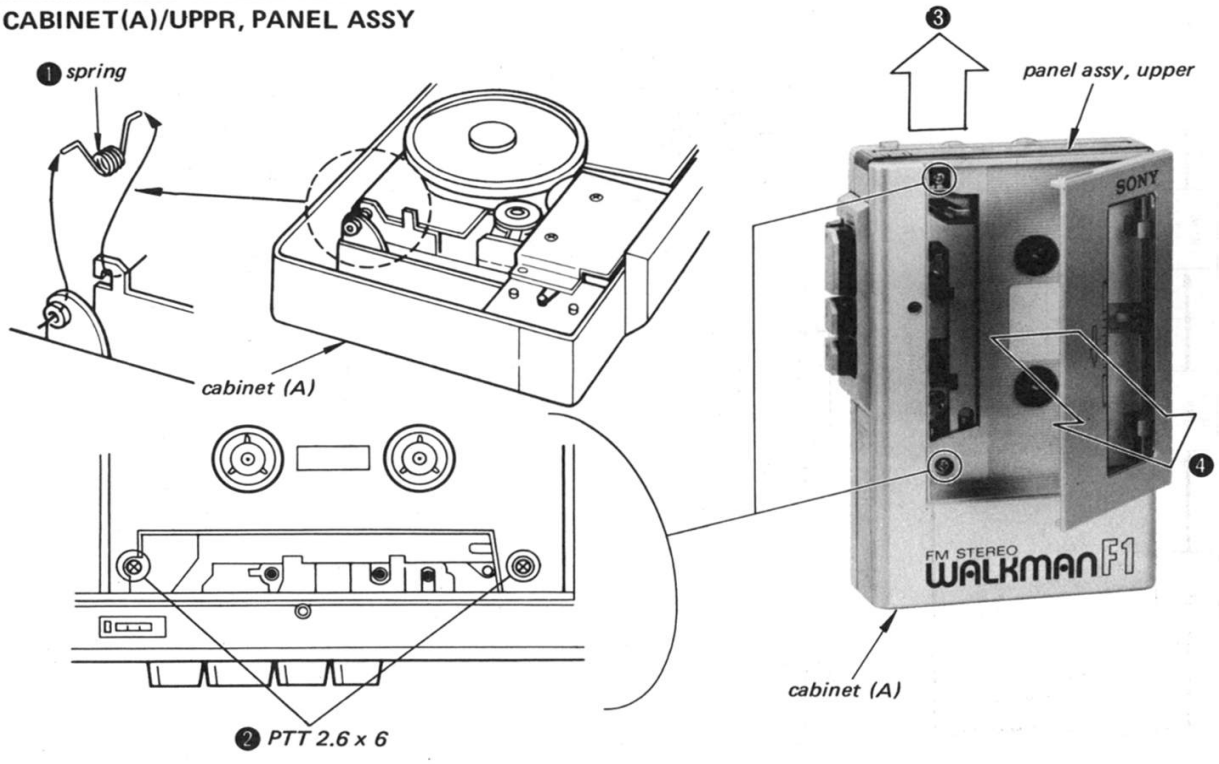
2-1. REMOVAL

- Follow the disassembly procedure in the numerical order given.

CABINET (B)



CABINET(A)/UPPR, PANEL ASSY



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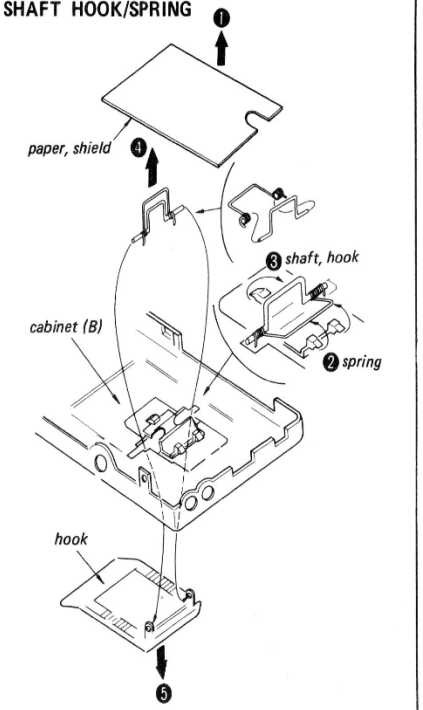
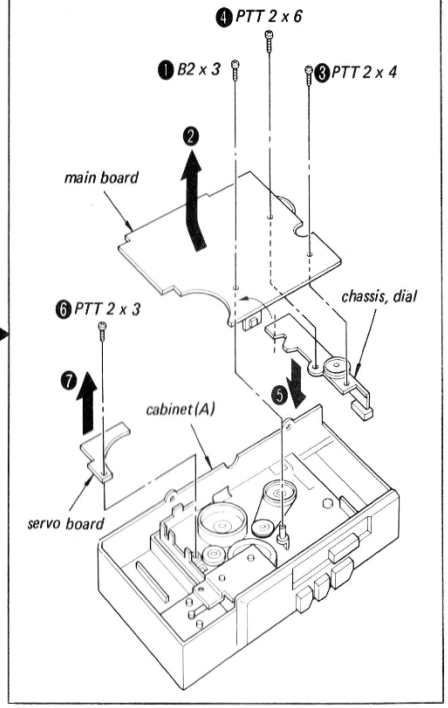
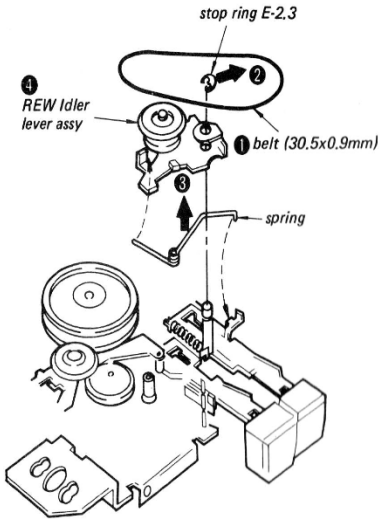
SHAFT HOOK/SPRING



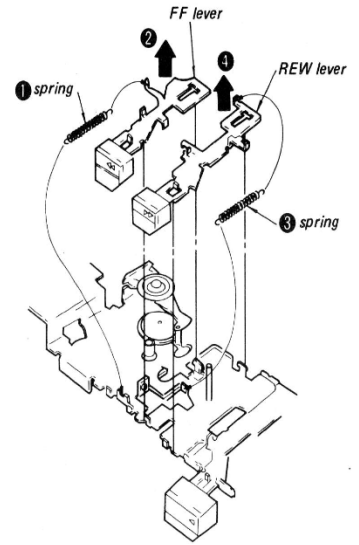
MAIN BOARD/SERVO BOARD/ DIAL CHASSIS



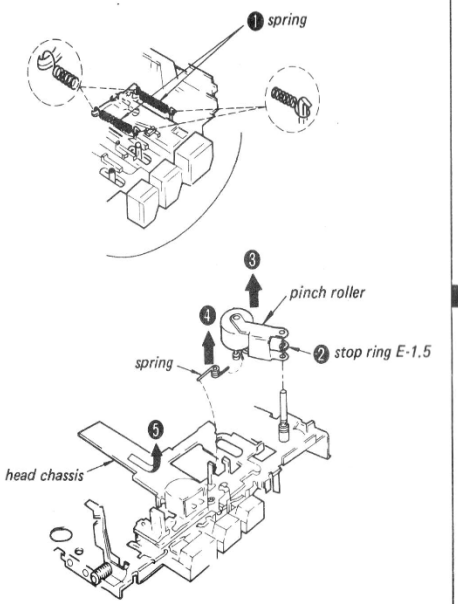
REW IDLER/BELT



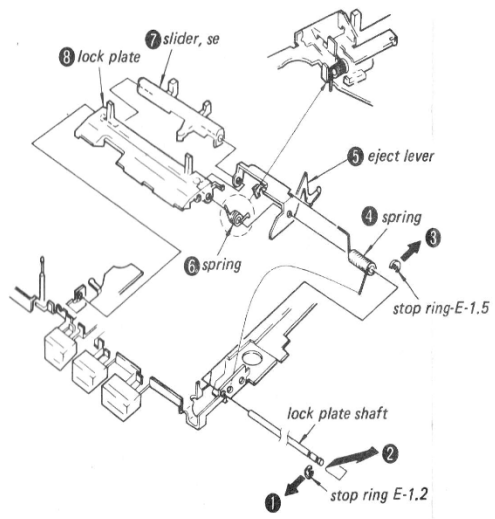
FF LEVER/REW LEVER



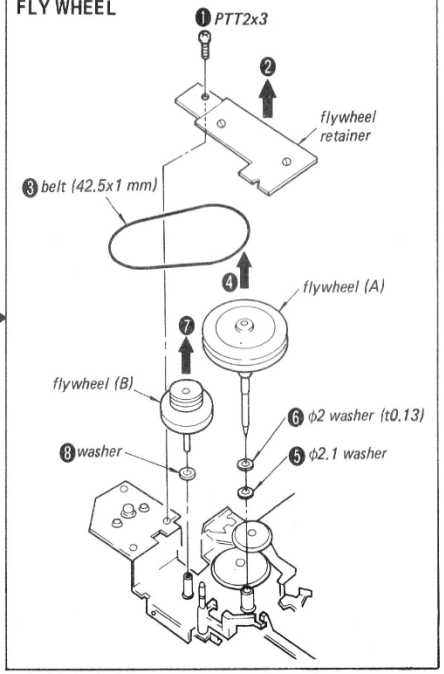
HEAD CHASSIS/PINCH ROLLER



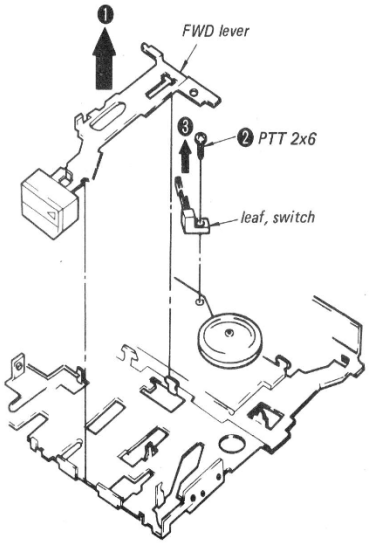
LOCK PLATE/EJECT LEVER



FLYWHEEL (A)/FLYWHEEL (B)/RETAINER, FLY WHEEL



FWD LEVER/LEAF, SWITCH



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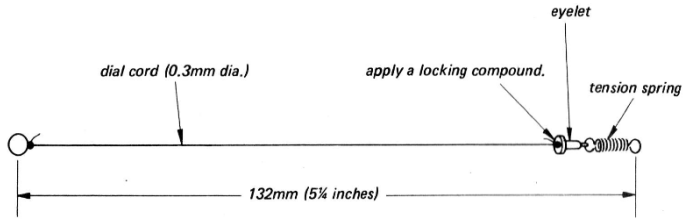
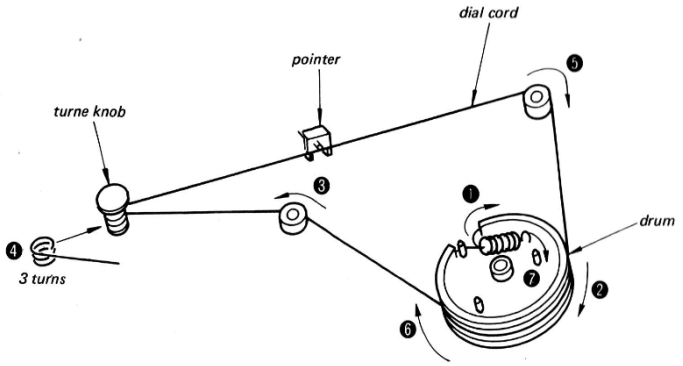
DIAL CORD STRINGING

1. Dial Cord Preparation



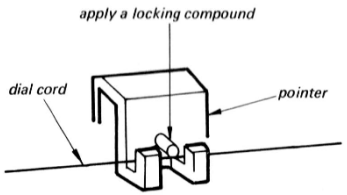
2. Dial Cord Stringing

- Turn the dial drum fully clockwise.
- Stringing as follow as from ❶ to ❼



3. Dial Pointer Setting

- After stringing the dial cord, receive the broadcasting and set the scale ring at the position.
- After setting the dial pointer, apply a licking compound.



SECTION 3
ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENT

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:

   playback head — pinch roller
   capstan — idlers belts

2. Demagnetize the record/playback head with a head demagnetizer. (Do not bring the head demagnetizer close to the erase head.)
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

power supply voltage: 6V dc

Torque Measurement

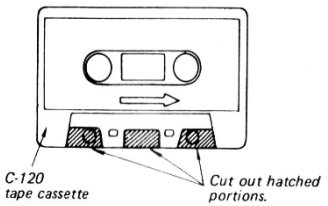
Torque	Meter Reading	Torque Meter
Forward	25–45 g·cm (0.34–0.62 oz.inch)	CQ-102B
Fast Forward and Rewind	more than 70 g·cm (0.97 oz inch)	CQ-201B
Back Tension	1–4 g·cm	CQ-102B

Tape Tension Measurement

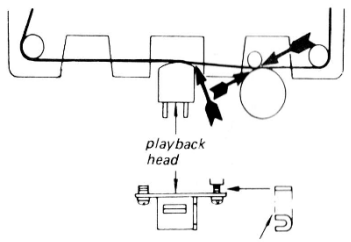
Meter	Meter Reading
CQ-403A	more than 130 g (4.59 oz)

Head Height Adjustment

1. Prepare an adjustment cassette as shown below.



2. In playback mode and viewing from the front, adjust the head heights to eliminate tape curl and tape twist at arrowed portions.

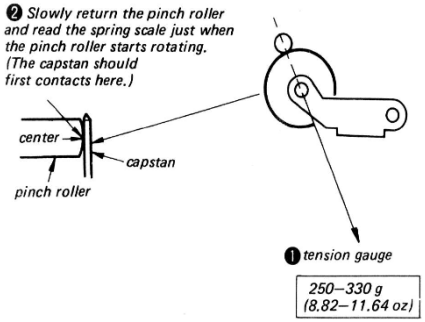


3-578-138-01 (t = 0.1)
3-578-138-11 (t = 0.2)
Shim, head height adjustment

Pinch Roller Pressure

– Playback Mode –

❷ Slowly return the pinch roller and read the spring scale just when the pinch roller starts rotating. (The capstan should first contacts here.)



250–330 g (8.82–11.64 oz)

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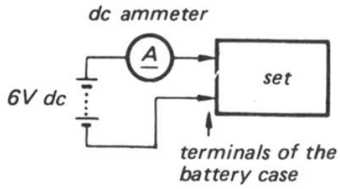
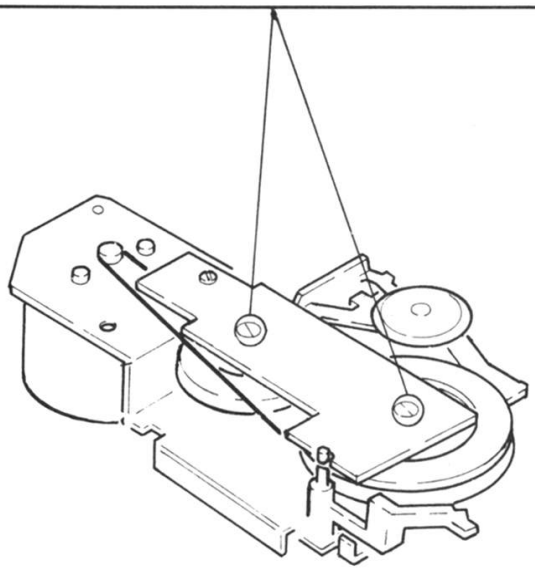
Flywheel Thrust Play Adjustment

– Playback Mode –



1. Turn the thrust screw counterclockwise until the screw tip leaves from the flywheel shaft.
2. Gradually turn the thrust screw clockwise to the position where the motor current suddenly increases.
3. Then, turn the thrust screw counterclockwise about ¼ turn from the position obtained in step 2.



3-2. ELECTRICAL ADJUSTMENTS

TAPE RECORDER SECTION

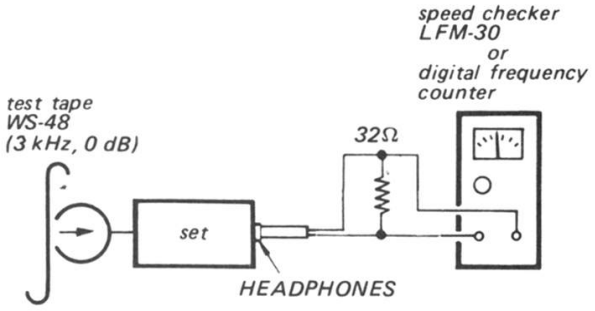
Tape Speed Adjustment

Setting:

VOLUME control: mechanical mid

Procedure:

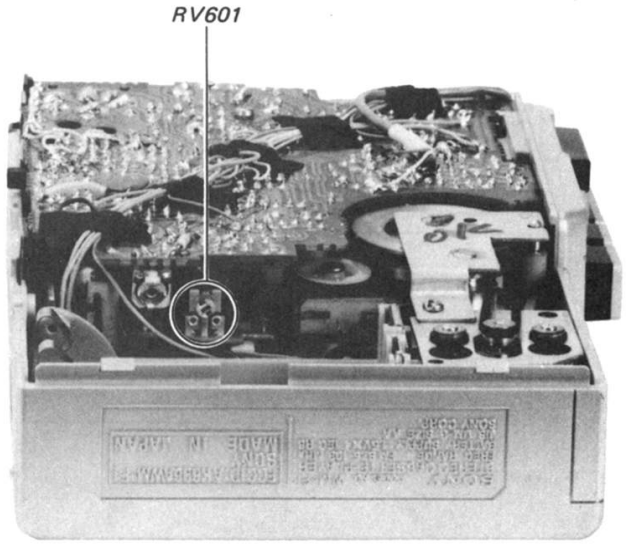
Mode: playback



Specification:

Speed checker	Digital frequency counter
–2.5~+2.5%	2,925~3,075Hz

Frequency difference between beginning and end of tape should be within ±2% (60Hz).



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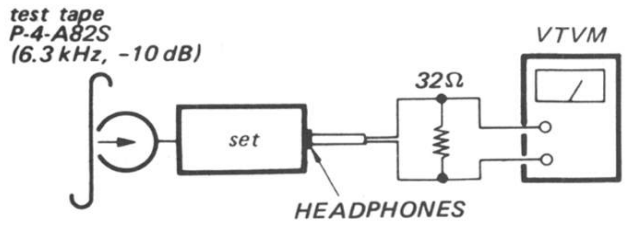
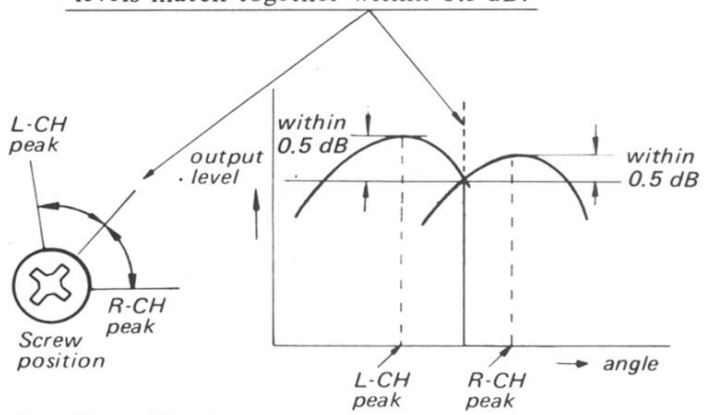
Playback Head Azimuth Adjustment

Procedure:

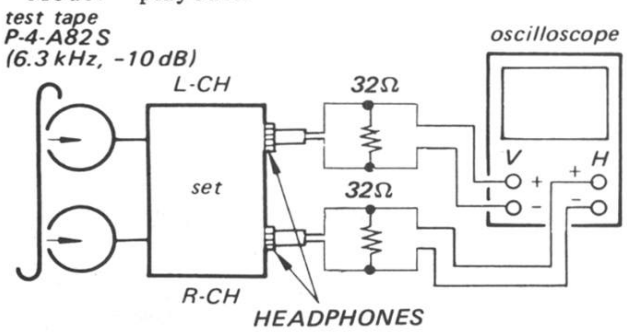
1. Mode: playback

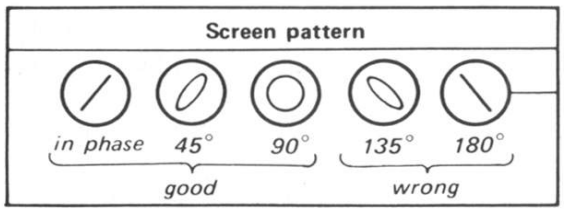


2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw where both of output levels match together within 0.5 dB.

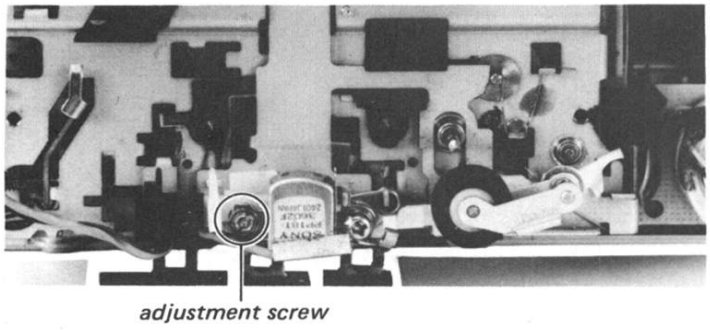


3. Phase Check
   Mode: playback





Adjustment Location:

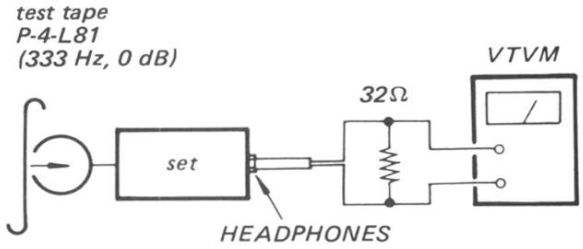


Playback Level Adjustment

Setting:

TAPE SELECT switch: NORMAL
VOL control: mechanical mid

Procedure:



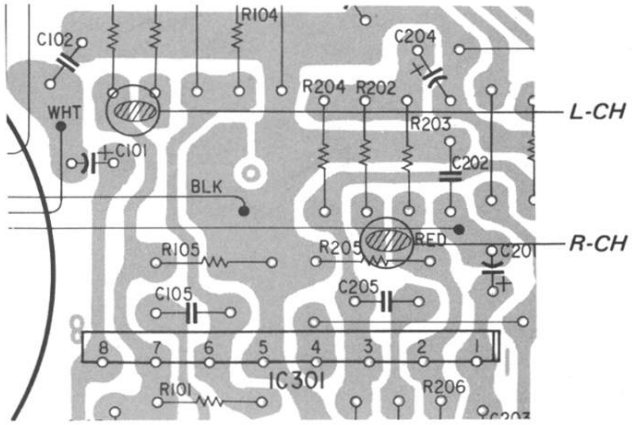
Specification:

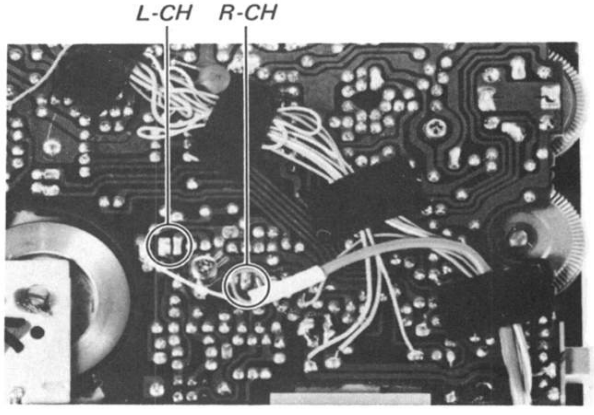
Level difference between channels:
less than 3 dB

Check that the HEADPHONES level does not change in playback mode while changing the mode from playback to stop several times.

Adjustment Location:

Pattern bridges	HEADPHONES level
bridge	high
open	low





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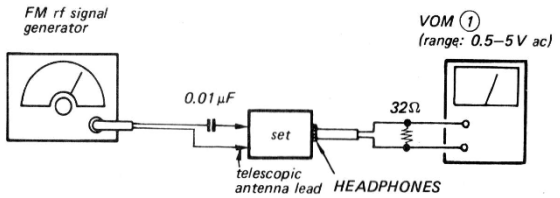
FM SECTION



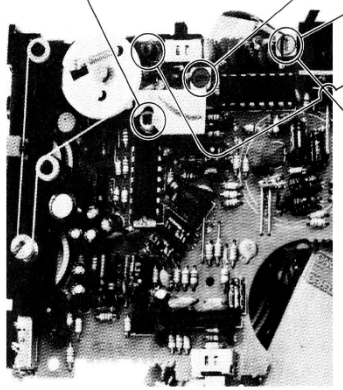
30% frequency modulation by 400 Hz signal.
±22.5 kHz frequency deviation.
(Modulation turned off for IF Alignment 2.)

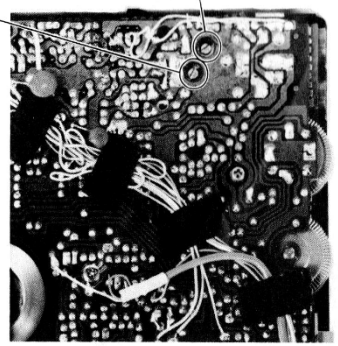
- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

FM FREQUENCY COVERAGE ADJUSTMENT	
Turn the adjustment screw for maximum VOM ① reading.	
87.1 MHz 87.35 MHz (AEP)	108.5 MHz 108 MHz (AEP)
L3	CT2

FM IF ALIGNEMNT 1	
Turn the adjustment screw for maximum VOM ① reading.	
10.7 MHz	
IFT-F1	IFT-F2

FM TRACKING ADJUSTMENT	
Turn the adjustment screw for maximum VOM ① reading.	
L1	87.1 MHz 87.35 MHz (AEP)
CT1	108.5 MHz 108 MHz (AEP)

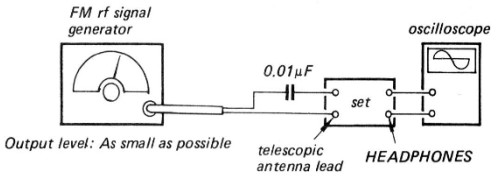




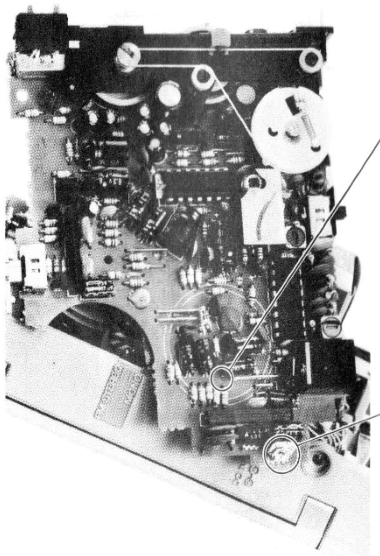
IFT-F2

FM IF ALIGNMENT 2

Procedure:



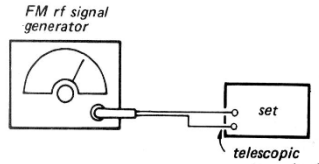
1. Turn IFT-F2 fully clockwise.
2. Make sure that sinewave appears three times when changing rf signal-generator frequency gradually.
3. Set rf signal-generator frequency for second sinewave, and precisely adjust rf signal-generator frequency for maximum reading on oscilloscope.
4. Adjust IFT-F2 for maximum reading and no noise on oscilloscope.



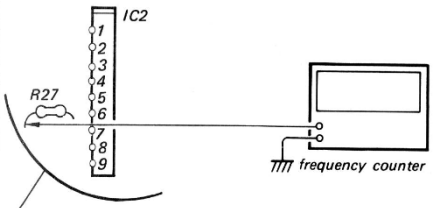
VCO Adjustment

A) Regular Method

Procedure:



Carrier frequency: 98 MHz
Modulation: 1 kHz, 22.5 kHz deviation (30%)
Output livel: 55dB (560μV)

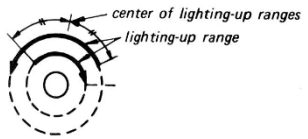


1. Tune the set to 92 MHz.
2. Adjust RV1 for 38 kHz ±200 Hz on the counter.

B) Simple Method

Procedure:

1. Tune the set to the FM stereo broadcasting signal.
2. Turn RV1 clockwise or counterclockwise and memorize the lighting-up range of the stereo lamp.
3. Secure RV1 at the center of the lighting-up range of both turns as shown below.



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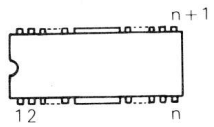
SECTION 4
DIAGRAMS

4-1. MOUNTING DIAGRAM

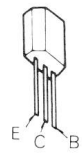
Semiconductor Lead Layouts

LA4177

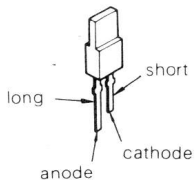


(Top view)

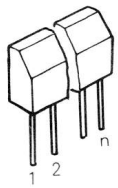
2SA1027R



GL9PR10

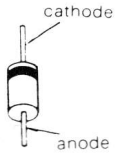


M5152IL

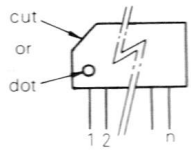


2SA1048
2SB808
2SC536SP
2SC930D
2SC930-SP
2SC2839
2SC2839E

IS1555
IS26875-1
SD113

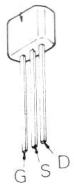


TA7343P

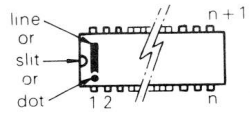


2SK193
2SK193F

letter side



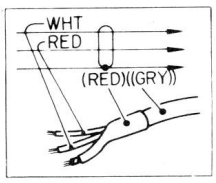
TA7640AP
TA7640P



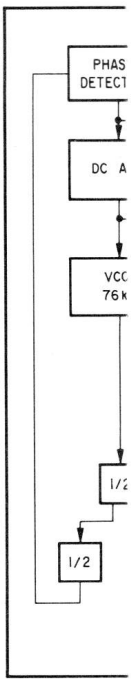
(Top view)

Note:

- Color code of sleeving over the end of the jacket.



- ○—: parts extracted from the component side.
- ■ : part mounted on the conductor side.
- DC resistance measurements are with coils and transformers connected on the circuit board, and are approximate.
- : component-side pattern.
- : B + pattern
- : signal path
- : L-CH signal path
- : R-CH signal path



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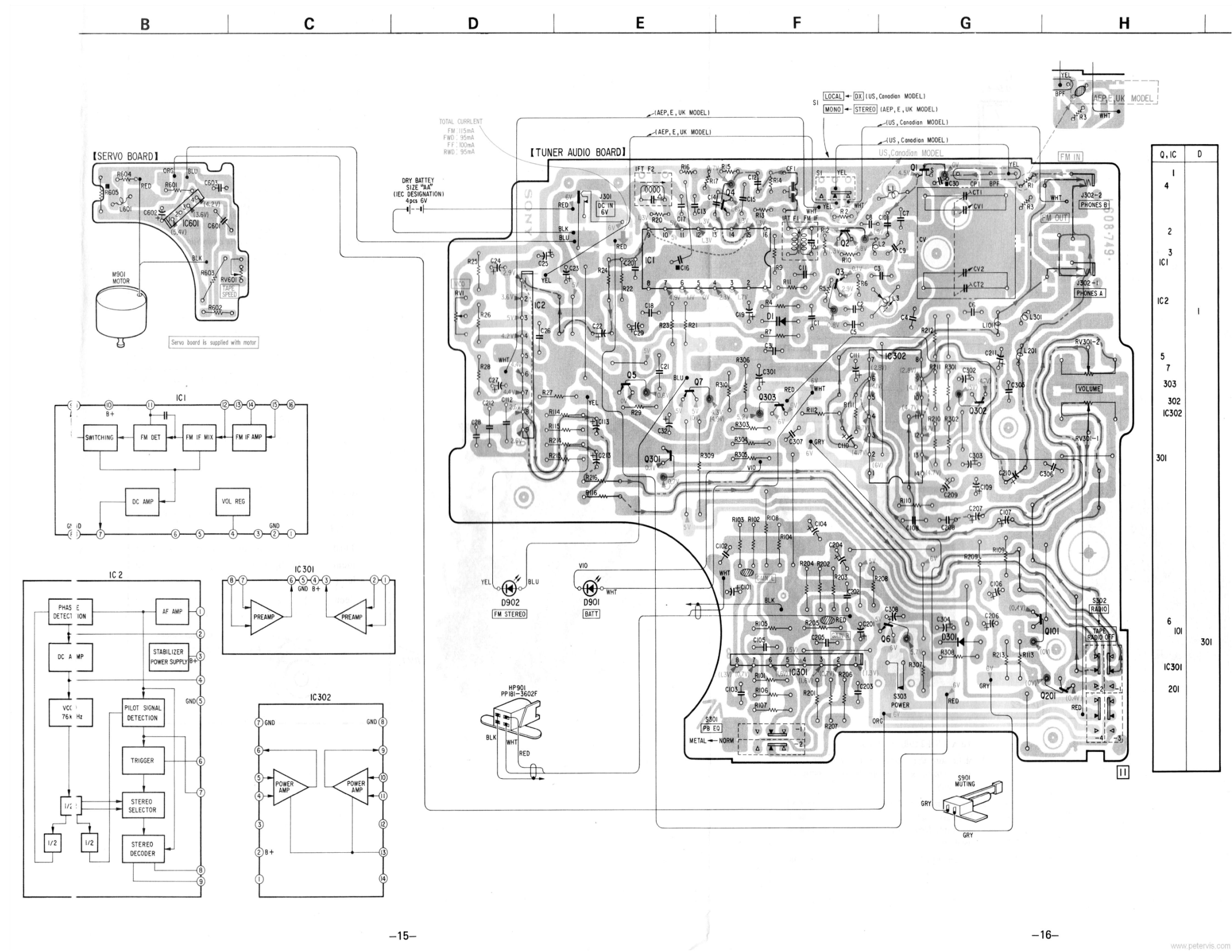

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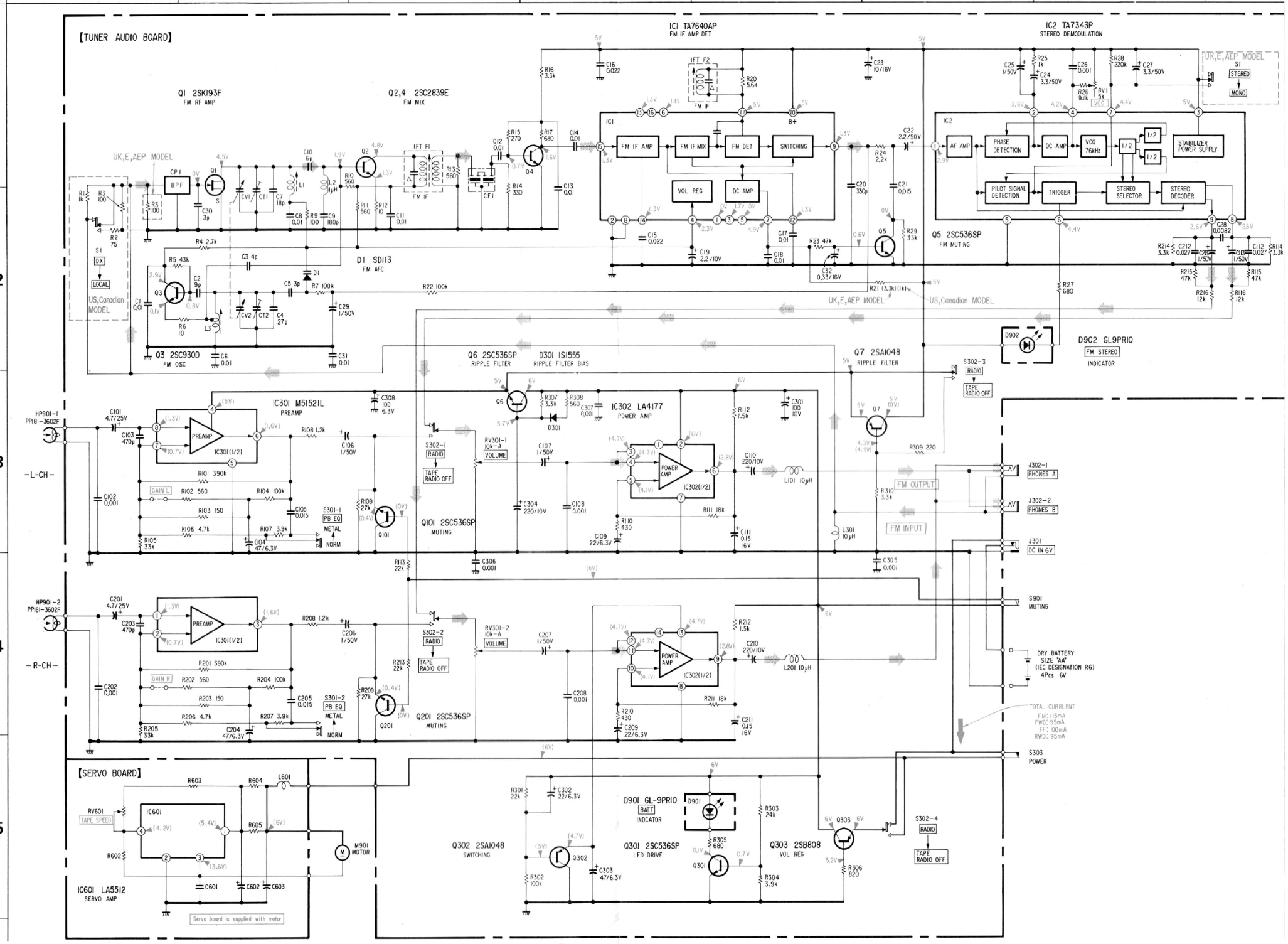
4-2 SCHEMATIC DIAGRAM



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Note:

- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ
- △ : internal component.
- ▭ : panel designation.
- ▭ : adjustment for repair.
- In using an electret condenser microphone with a red mark on the side of the case, connect R shown by in parallel with R .
- ——: B+ bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal conditions
  no mark : FM
  ( ) : TAPE
- Voltage variations may be noted due to normal production tolerances.
- AC voltage readings in the bias oscillator with a VTVM.
- Total current is measured with no cassette installed.
- Switch

Ref. No.	Switch	Position
S1 (UK, E, AEP MODEL)	STEREO/MONO	STEREO
S1 (US, Canadian MODEL)	DX/LOCAL	DX
S301	PB EQ	NORM
S302	RADIO/TAPE	RADIO
S303	POWER	OFF
S901	MUTING	OFF

- ➡ : signal path

Note: Voltages are measured with a VOM (50kΩ/V).

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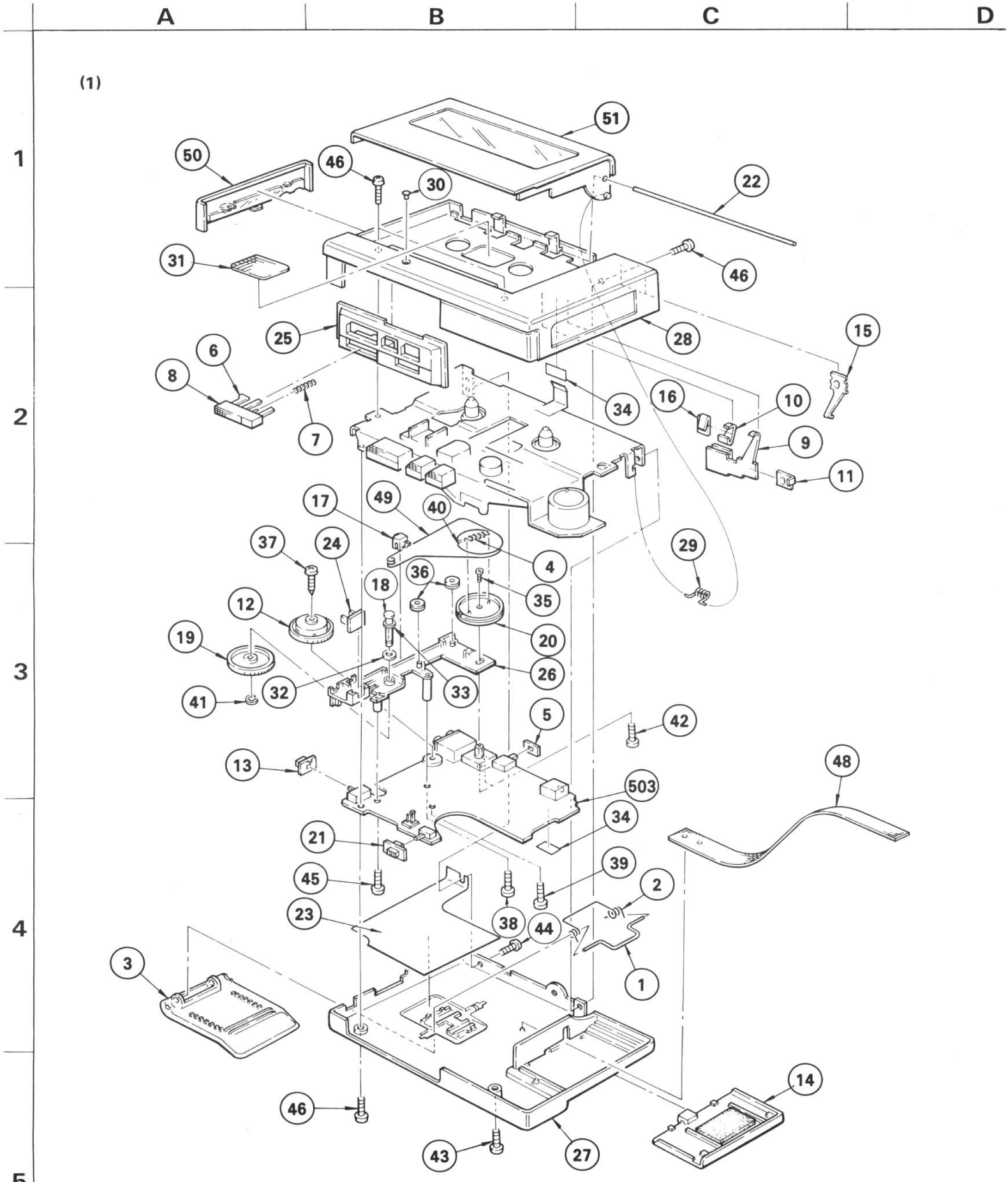
SECTION 5
EXPLODED VIEWS AND PARTS LIST



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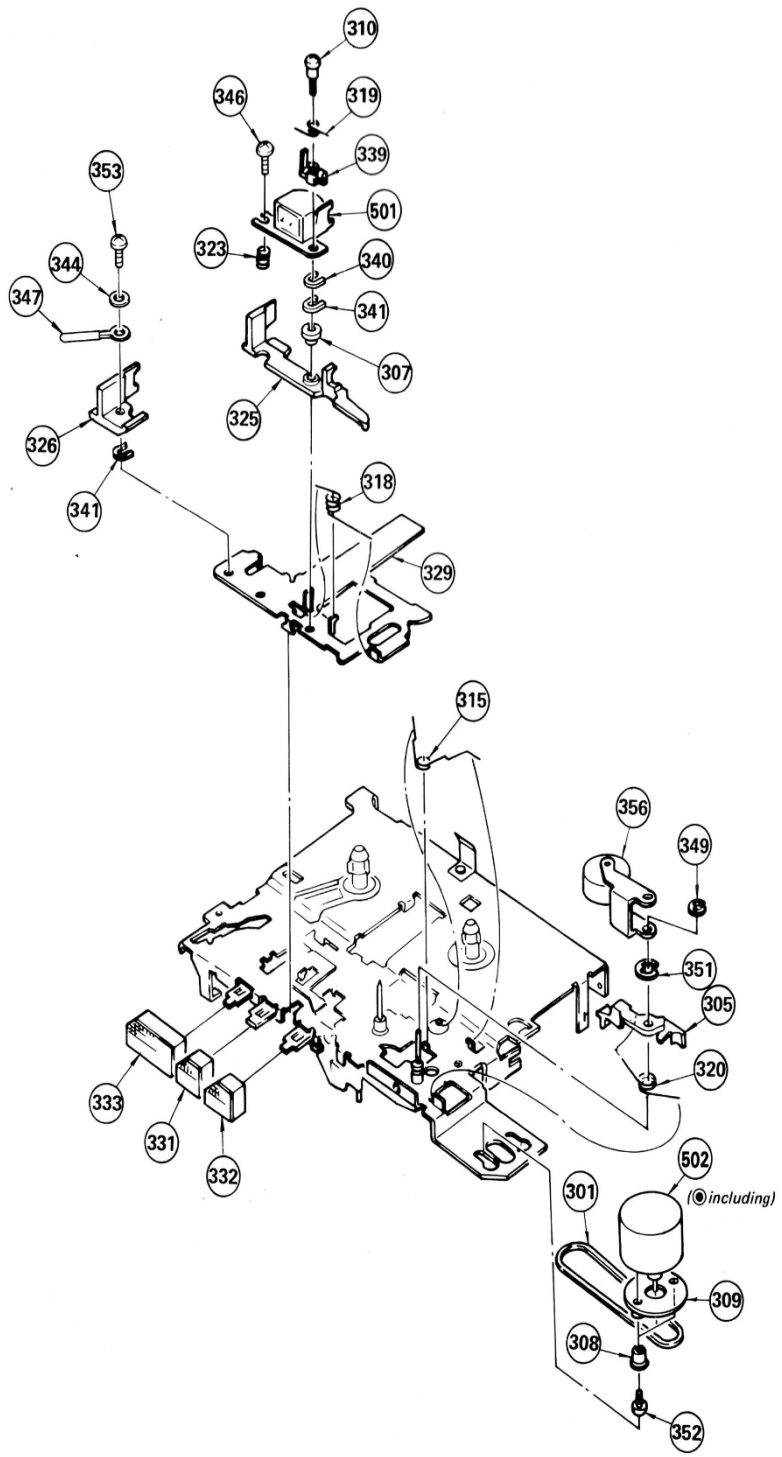

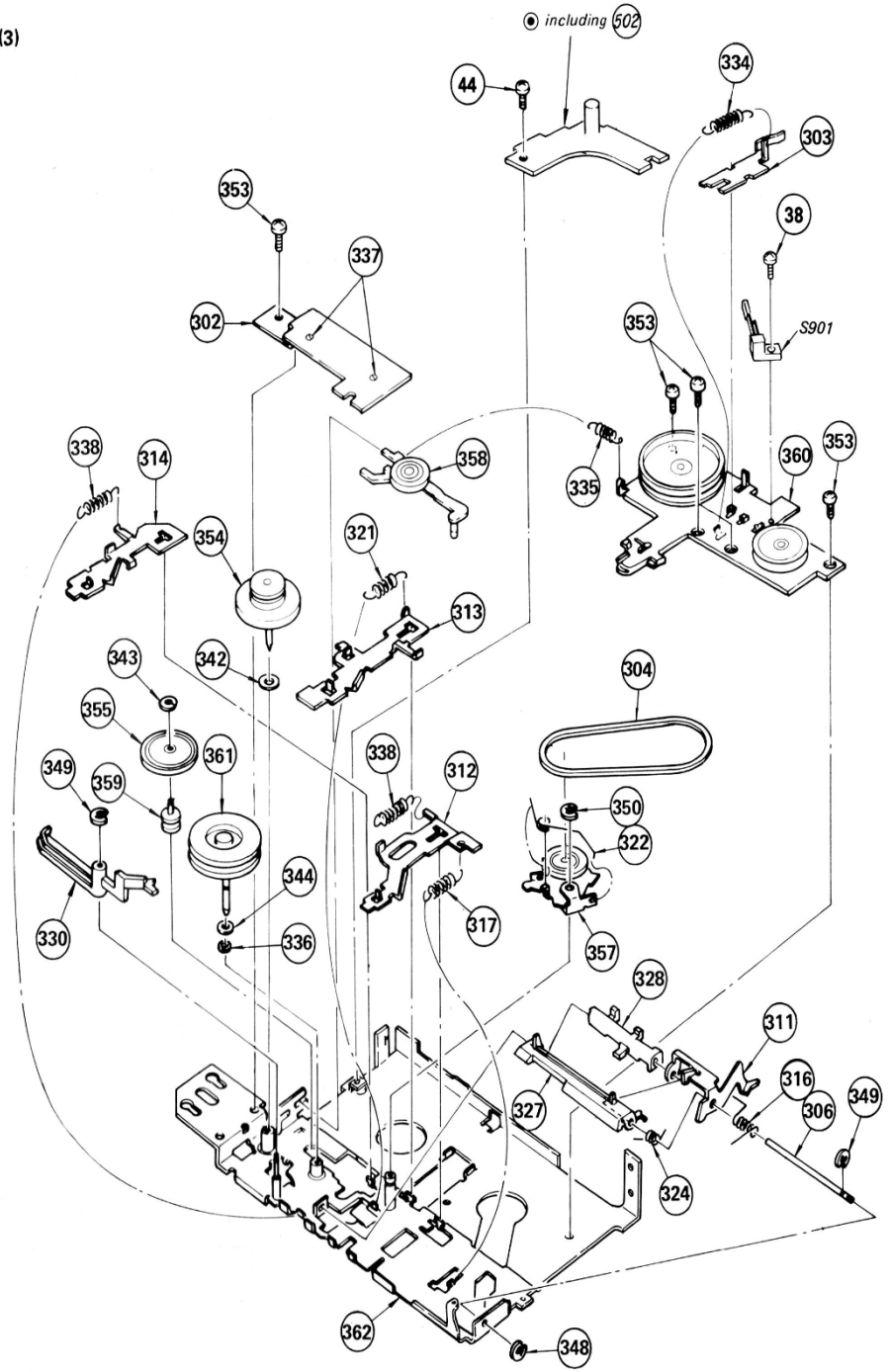

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GENERAL SECTION

No.	Part No.	Description
1	♦;3-301-409-00	SHAFT, HOOK
2	3-301-410-00	SPRING
3	3-301-416-00	HOOK
4	3-303-915-00	SPRING, TENSION
5	3-305-653-00	PLATE (A), BLIND
6	♦;3-307-105-00	LEVER, STOP BUTTON
7	3-307-108-00	SPRING, COMPRESSION
8	3-307-110-00	BUTTON, STOP
9	3-309-406-02	TERMINAL BOARD (B), BATTERY
10	3-309-407-02	TERMINAL BOARD (C), BATTERY
11	3-309-408-00	TERMINAL BOARD (D), BATTERY
12	3-309-410-00	KNOB, CONTROL
13	3-309-411-00	BUTTON (A)
14	3-309-417-31	LID, BATTERY CASE
15	3-309-442-00	TERMINAL BOARD, BATTERY (A)
16	3-309-443-00	SPRING, LEAF
17	3-310-702-00	POINTER
18	3-310-703-00	SHAFT, TUNER
19	3-310-704-00	KNOB, TUNER
20	3-310-705-00	DRUM
21	3-310-706-00	BUTTON (B)
22	♦;3-310-707-00	SHAFT, CASSETTE LID
23	3-310-708-00	PAPER, SHIELD
24	♦;3-310-709-00	PLATE (A), SHIELD
25	3-310-711-00	PANEL, CONTROL
26	3-310-712-00	CHASSIS, DIAL
27	3-310-713-00	CABINET (B)
28	3-310-714-01	(US,Canadian)...CABINET (A)
28	3-310-714-11	(AEP).....CABINET (A)
28	3-310-714-21	(UK,E).....CABINET (A)
29	3-310-718-00	SPRING
30	3-545-657-21	BUSH
31	3-556-221-00	PLATE, ORNAMENTAL
32	3-701-441-01	WASHER
33	3-701-442-01	WASHER, POLYETHYLENE
34	3-831-441-XX	CUSHION
35	3-880-990-00	SCREW (1.7X3), FLAT, (+) SPECIAL
36	3-881-911-00	PULLEY
37	3-888-156-00	SCREW
38	7-621-783-01	SCREW +B 2X3
39	7-621-772-38	SCREW +PTT 2X6 (S)
40	7-623-615-00	EYELET, IXI
41	7-624-104-04	STOP RING 2.0, TYPE -E
42	7-685-104-11	SCREW +P 2X6 TYPE2 NON-SLIT
43	7-685-134-14	SCREW +P 2.6X8 TYPE2 NON-SLIT

GENERAL SECTION

No.	Part No.	Description
44	7-685-780-04	SCREW +PTT 2X3 (S)
45	7-685-781-01	SCREW +PTT 2X4 (S)
46	7-685-792-04	SCREW +PTT 2.6X6 (S)
47	9-911-815-02	CUSHION, BATTERY LID
48	9-911-816-01	RIBBON, BATTERY
49	9-911-825-32	STRING DIAL 0.3DIA
50	X-3310-701-0	PANEL ASSY, UPPER
51	X-3310-702-0	LID ASSY, CASSETTE

ACCESSORY & PACKING MATERIAL

No.	Part No.	Description
101	1-528-027-11	BATTERY, NEW SUPER (SUM-3)(NS)
102	3-309-424-00	SPACER
103	3-309-425-00	CUSHION
104	3-310-716-00	INDIVIDUAL CARTON
105	3-527-213-02	(Canadian,AEP,UK,E)...LABEL, SERIAL NUMBER
106	3-701-999-00	(US).....LABEL, SERIAL NUMBER
107	3-570-631-71	BAG, POLYETHYLENE
108	3-701-624-00	BAG, POLYETHYLENE
109	3-773-200-12	(AEP,UK,E).....MANUAL, INSTRUCTION
110	3-773-200-22	(US,Canadian)...MANUAL, INSTRUCTION
111	7-824-012-21	(US)...INSTRUCTION (TAPE, CASETTE)
112	8-893-535-00	TAPE, DEMONSTRATION (CD-817)
113	8-951-144-91	MDR-1L1 (B) (SET)
114	X-3309-403-0	BELT ASSY, SHOULDER

MECHANISM SECTION

No.	Part No.	Description
301	3-306-803-00	BELT (42.5X1)
302	♦;3-306-806-00	RETAINER, FLY
303	♦;3-306-812-00	LEVER, SWITCH
304	3-306-816-00	BELT (30.5X0.9)
305	3-306-823-00	LEVER, SHUT-OFF
306	3-306-826-00	SHAFT, LOCK PLATE
307	3-306-827-00	COLLAR, HEAD
308	♦;3-306-828-00	COLLAR, MOTOR
309	3-306-829-00	CUSHION, MOTOR
310	3-306-830-00	SCREW, FITTING, HEAD
311	3-306-842-00	LEVER, EJECT
312	3-306-853-11	LEVER, FWD
313	3-306-855-00	LEVER, REW
314	3-306-856-11	LEVER, FF
315	3-306-858-00	SPRING

NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (△-△△△-△△△-XX or △-△△△△-△△△-X) may be different from those used in the set.

CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS

- MMH : mH, UH : μH

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

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MECHANISM SECTION

No.	Part No.	Description
316	3-306-859-00	SPRING
317	3-306-861-00	SPRING, TENSION
318	3-306-862-00	SPRING
319	3-306-863-00	SPRING
320	3-306-864-00	SPRING
321	3-306-866-00	SPRING, TENSION
322	3-306-867-00	SPRING
323	3-306-872-00	SPRING, COMPRESSION
324	3-306-876-00	SPRING
325	3-306-878-00	LEVER, DETECTION
326	3-306-879-00	GUIDE, TAPE
327	3-306-880-00	PLATE, LOCK
328	3-306-881-00	SLIDER, SE
329 ♦	3-306-882-11	CHASSIS, HEAD
330	3-306-883-00	LEVER, RELEASE
331	3-306-887-00	BUTTON, REW
332	3-306-888-00	BUTTON, FF
333	3-309-423-00	BUTTON, PLAY
334	3-508-108-XX	SPRING, TENSION
335	3-531-794-00	SPRING, TENSION
336	3-545-715-00	WASHER
337	3-547-625-00	SCREW, THRUST ADJUST
338	3-564-949-00	SPRING, TENSION
339 ♦	3-568-733-00	CLAMP
340	3-578-138-01	SEAM
341	3-578-138-11	SEAM
342	3-578-223-11	WASHER
343	3-590-523-00	WASHER, STOPPER
344	3-701-437-01	WASHER
345	3-701-467-00	SCREW, LOCK
346	7-621-971-05	SCREW, TOTSU PS 2X4
347	7-623-505-01	LUG, 2
348	7-624-101-01	RING, RETAINING E-1.2
349	7-624-102-04	STOP RING 1.5, TYPE -E
350	7-624-105-04	STOP RING 2.3, TYPE -E
351	7-624-106-04	STOP RING 3.0, TYPE -E
352	7-627-557-07	SCREW, PRECISION +P1.7X5.5
353	7-685-780-04	SCREW, TOTSU PTT 2X3
354	X-3306-804-0	FLYWHEEL (B) ASSY
355	X-3306-807-0	IDLER ASSY, FWD
356	X-3306-813-0	PINCH ROLLER ASSY
357	X-3306-815-0	LEVER ASSY, REW IDLER
358	X-3306-816-0	LEVER ASSY, FF IDLER
359 ♦	X-3306-817-0	SHAFT ASSY, T IDLER
360	X-3306-820-0	BEARING ASSY, REEL
361	X-3306-830-0	FLYWHEEL (A) ASSY
362 ♦	X-3309-601-0	CHASSIS ASSY

ELECTRICAL PARTS

Ref.No.	Part No.	Description
501	8-829-373-50	HEAD (PP1818-3602F)
502	8-835-075-11	MOTOR, DC (DNE-5600B)
503 ♦	A-3260-144-A	MOUNTED PCB, MAIN
C2	1-102-507-00	CERAMIC 9PF 0.5PF 50V
C3	1-102-504-00	CERAMIC 4PF 0.25PF 50V
C4	1-102-643-21	CERAMIC 27PF 5% 50V
CF1	1-527-795-71	FILTER, CERAMIC
CP1	1-231-892-00	FILTER, BANDPASS
CT1	1-151-408-00	CAP, TUNING, POLYETHYLENE
CT2	1-151-408-00	CAP, TUNING, POLYETHYLENE
CV1	1-151-408-00	CAP, TUNING, POLYETHYLENE
CV2	1-151-408-00	CAP, TUNING, POLYETHYLENE
D1	8-719-768-71	DIODE 1S2687S-1
D301	8-719-815-55	DIODE 1S1555
D901	8-719-909-10	DIODE GL9PR10
D902	8-719-909-10	DIODE GL9PR10
IC1	8-759-200-06	IC TA7640P
IC2	8-759-200-62	IC TA7343P
IC301	1-800-570-11	IC M51521L
IC302	8-759-800-31	IC LA4177
IFT-F1	1-404-126-00	IFT (SMALL TYPE)
IFT-F2	1-404-399-00	TRANSFORMER, DISCRIMINATOR
J301	1-507-749-00	JACK, EXTENTION POWER
J302	1-507-727-00	JACK 2P
L1	1-425-349-00	COIL,FM RF
L2	1-408-551-00	MICRO INDUCTOR 1UH
L3	1-459-410-00	COIL (WITH CORE)
L101	1-408-563-00	MICRO INDUCTOR 10UH
L201	1-408-563-00	MICRO INDUCTOR 10UH
L301	1-407-157-XX	MICRO INDUCTOR 10UH
Q1	8-729-119-32	TRANSISTOR 2SK193
Q2	8-729-883-92	TRANSISTOR 2SC2839
Q3	8-729-803-45	TRANSISTOR 2SC930-SP
Q4	8-729-883-92	TRANSISTOR 2SC2839E
Q5	8-729-853-63	TRANSISTOR 2SC536SP
Q6	8-729-853-63	TRANSISTOR 2SC536SP
Q7	8-729-612-77	TRANSISTOR 2SA1027R
Q101	8-729-853-63	TRANSISTOR 2SC536SP
Q201	8-729-853-63	TRANSISTOR 2SC536SP
Q301	8-729-853-63	TRANSISTOR 2SC536SP
Q302	8-729-612-77	TRANSISTOR 2SA1027R
Q303	8-729-800-83	TRANSISTOR 2SB808
R1	1-247-831-00	(US,Canadian)...CARBON 1K 5% 1/6W
R2	1-247-804-00	(US,Canadian)...CARBON 75 1/6W
R3	1-247-807-00	CARBON 100 5% 1/6W

NOTE:

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- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS

- MMH : mH, UH : μH

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

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ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R4	1-247-841-00	CARBON	2.7K	5%	1/6W
R5	1-247-870-00	CARBON	43K	5%	1/6W
R6	1-247-783-00	CARBON	10	5%	1/6W
R7	1-247-879-00	CARBON	100K	5%	1/6W
R10	1-247-897-00	CARBON	560K	5%	1/6W
R11	1-247-825-00	CARBON	560	5%	1/6W
R12	1-247-783-00	CARBON	10	5%	1/6W
R13	1-247-825-00	CARBON	560	5%	1/6W
R14	1-247-819-00	CARBON	330	5%	1/6W
R15	1-247-889-00	CARBON	270K	5%	1/6W
R16	1-247-843-00	CARBON	3.3K	5%	1/6W
R17	1-247-827-00	CARBON	680	5%	1/6W
R20	1-247-849-00	CARBON	5.6K	5%	1/6W
R21	1-247-831-00	(US,Canadian)...CARBON	1K	5%	1/6W
R21	1-247-843-00	(UK,AEP,E).....CARBON	1K	5%	1/6W
R22	1-247-879-00	CARBON	100K	5%	1/6W
R23	1-247-871-00	CARBON	47K	5%	1/6W
R24	1-247-839-00	CARBON	2.2K	5%	1/6W
R25	1-247-831-00	CARBON	1K	5%	1/6W
R26	1-247-854-00	CARBON	9.1K	5%	1/6W
R27	1-247-827-00	CARBON	680	5%	1/6W
R28	1-247-887-00	CARBON	220K	5%	1/6W
R29	1-247-867-00	CARBON	33K	5%	1/6W
R101	1-247-893-00	CARBON	390K	5%	1/6W
R102	1-247-825-00	CARBON	560	5%	1/6W
R103	1-247-811-00	CARBON	150	5%	1/6W
R104	1-247-879-00	CARBON	100K	5%	1/6W
R105	1-247-867-00	CARBON	33K	5%	1/6W
R106	1-247-847-00	CARBON	4.7K	5%	1/6W
R107	1-247-845-00	CARBON	3.9K	5%	1/6W
R108	1-247-833-00	CARBON	1.2K	5%	1/6W
R109	1-247-865-00	CARBON	27K	5%	1/6W
R110	1-247-822-00	CARBON	430	5%	1/6W
R111	1-247-861-00	CARBON	18K	5%	1/6W
R112	1-247-835-00	CARBON	1.5K	5%	1/6W
R113	1-247-863-00	CARBON	22K	5%	1/6W
R114	1-247-843-00	CARBON	3.3K	5%	1/6W
R115	1-247-871-00	CARBON	47K	5%	1/6W
R116	1-247-857-00	CARBON	12K	5%	1/6W
R201	1-247-893-00	CARBON	390K	5%	1/6W
R202	1-247-825-00	CARBON	560	5%	1/6W
R203	1-247-811-00	CARBON	150	5%	1/6W
R204	1-247-879-00	CARBON	100K	5%	1/6W
R205	1-247-867-00	CARBON	33K	5%	1/6W
R206	1-247-847-00	CARBON	4.7K	5%	1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R207	1-247-845-00	CARBON	3.9K	5%	1/6W
R208	1-247-833-00	CARBON	1.2K	5%	1/6W
R209	1-247-865-00	CARBON	27K	5%	1/6W
R210	1-247-822-00	CARBON	430	5%	1/6W
R211	1-247-861-00	CARBON	18K	5%	1/6W
R212	1-247-835-00	CARBON	1.5K	5%	1/6W
R213	1-247-863-00	CARBON	22K	5%	1/6W
R214	1-247-843-00	CARBON	3.3K	5%	1/6W
R215	1-247-871-00	CARBON	47K	5%	1/6W
R216	1-247-857-00	CARBON	12K	5%	1/6W
R301	1-247-863-00	CARBON	22K	5%	1/6W
R302	1-247-879-00	CARBON	100K	5%	1/6W
R303	1-247-864-00	CARBON	24K	5%	1/6W
R304	1-247-845-00	CARBON	3.9K	5%	1/6W
R305	1-247-827-00	CARBON	680	5%	1/6W
R306	1-247-829-00	CARBON	820	5%	1/6W
R307	1-247-843-00	CARBON	3.3K	5%	1/6W
R308	1-247-825-00	CARBON	560	5%	1/6W
R309	1-247-815-00	CARBON	220	5%	1/6W
R310	1-247-843-00	CARBON	3.3K	5%	1/6W
RV1	1-226-522-00	RES, ADJ, CERMET 5K			
RV301	1-228-169-00	RES, VAR, CARBON 10K/10K			
S1	1-554-123-00	SWITCH, SLIDE			
S301	1-554-123-00	SWITCH, SLIDE			
S302	1-554-295-00	SWITCH, SLIDE			
S303	1-554-024-00	SWITCH, LEAF			
S901	1-514-346-00	SWITCH, LEAF			

NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS

- MMH : mH, UH : μH

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

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ELECTROLYTIC CAPACITORS

CAP. (μF)	RATING → : Use the high voltage rated one.					
	6.3 VOLT.	10 VOLT.	16 VOLT.	25 VOLT.	35 VOLT.	50 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.47					→	1-121-726-00
1.0					→	1-121-391-00
2.2					→	1-121-450-00
3.3	→	→	→	1-121-392-00	→	1-121-393-00
4.7	→	→	→	1-121-395-00	→	1-121-396-00
10	→	→	1-121-651-00	1-121-398-00	→	1-121-738-00
22	→	→	1-121-479-00	1-121-480-00	1-121-662-00	1-121-152-00
33	→	→	1-121-403-00	1-121-404-00	1-121-652-00	1-121-405-00
47	→	1-121-352-00	1-121-409-00	1-121-410-00	1-121-653-00	1-121-411-00
100	→	1-121-414-00	1-121-415-00	1-121-416-00	1-121-357-00	1-121-417-00
220	1-121-419-00	1-121-420-00	1-121-421-00	1-121-422-00	1-121-261-00	1-121-423-00
330	1-121-751-00	1-121-805-00	1-121-521-00	1-121-654-00	1-121-655-00	1-121-656-00
470	1-121-424-00	1-121-425-00	1-121-426-00	1-121-733-00	1-121-361-00	1-121-810-00
1000	–	1-121-736-00	1-121-245-00	1-121-657-00	1-121-388-00	1-123-061-00
2200	1-121-658-00	1-121-659-00	1-121-660-00	1-123-067-00	1-121-984-00	–
3300	1-121-661-00	1-123-075-00	1-123-071-00	–	–	–

CAP. (μF)	100 VOLT.	160 VOLT.	250 VOLT.	350 VOLT.
	PART No.	PART No.	PART No.	PART No.
0.47	–	–	–	–
1.0	1-123-249-00	1-123-252-00	1-123-003-00	1-121-168-00
2.2	1-123-250-00	1-123-026-00	–	1-123-028-00
3.3	1-121-995-00	–	1-123-004-00	1-123-006-00
4.7	1-123-255-00	1-121-246-00	1-121-759-00	1-123-007-00
10	1-121-126-00	1-121-999-00	1-123-254-00	1-123-008-00
22	1-121-996-00	1-123-253-00	1-123-005-00	1-123-022-00
33	1-121-997-00	1-121-757-00	–	–
47	1-123-251-00	1-121-919-00	–	–
100	1-123-084-00	–	–	–

CERAMIC CAPACITORS

CAP. (pF)	RATING							
	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (μF)	50 VOLT.
	PART No.		PART No.		PART No.		PART No.
0.5	1-101-837-00	22	1-102-959-00	150	1-101-361-00	0.001	1-102-074-00
0.75	1-101-586-00	24	1-102-960-00	160	1-101-367-00	0.0012	1-102-118-00
1.0	1-102-934-00	27	1-102-961-00	180	1-102-976-00	0.0015	1-102-119-00
1.5	1-101-576-00	30	1-102-962-00	200	1-102-977-00	0.0018	1-102-120-00
2.0	1-102-935-00	33	1-102-963-00	220	1-102-978-00	0.0022	1-102-121-00
3	1-102-936-00	36	1-102-964-00	240	1-102-979-00	0.0027	1-102-122-00
4	1-102-937-00	39	1-102-965-00	270	1-102-980-00	0.0033	1-102-123-00
5	1-102-942-00	43	1-102-966-00	300	1-102-981-00	0.0039	1-102-124-00
6	1-102-943-00	47	1-101-880-00	330	1-102-820-00	0.0047	1-102-125-00
7	1-102-944-00	51	1-101-882-00	360	1-102-821-00	0.0056	1-102-126-00
8	1-102-945-00	56	1-101-884-00	390	1-102-822-00	0.0068	1-102-127-00
9	1-102-946-00	62	1-101-886-00	430	1-102-823-00	0.0082	1-102-128-00
10	1-102-947-00	68	1-101-888-00	470	1-102-824-00	0.01	1-102-129-00
11	1-102-948-00	75	1-101-890-00	510	1-101-059-00	0.022	1-101-005-00
12	1-102-949-00	82	1-102-971-00	560	1-102-115-00	0.047	1-101-006-00
13	1-102-950-00	91	1-102-972-00	680	1-102-116-00		
15	1-102-951-00	100	1-102-973-00	820	1-102-117-00		
16	1-102-952-00	110	1-102-815-00				
18	1-102-953-00	120	1-102-816-00				
20	1-102-958-00	130	1-101-081-00				

0.001μF = 1,000pF

CERAMIC (SEMICONDUCTOR) CAPACITORS

CAP. (μF)	RATING → : Use the high voltage rated one.				
	25 VOLT.	50 VOLT.	CAP. (μF)	25 VOLT.	50 VOLT.
	PART No.	PART No.		PART No.	PART No.
0.001	→	1-161-039-00	0.018	1-161-016-00	1-161-054-00
0.0012	→	1-161-040-00	0.022	1-161-017-00	1-161-055-00
0.0015		1-161-041-00	0.027	1-161-018-00	1-161-056-00
0.0018		1-161-042-00	0.033	1-161-019-00	1-161-057-00
0.0022		1-161-043-00	0.039	1-161-010-00	1-161-058-00
0.0027	→	1-161-044-00	0.047	1-161-021-00	1-161-059-00
0.0033	→	1-161-045-00	0.056	→	1-161-060-00
0.0039	→	1-161-046-00	0.068	→	1-161-061-00
0.0047	→	1-161-047-00	0.082	1-161-024-00	1-161-062-00
0.0056	→	1-161-048-00	0.1	1-161-025-00	1-161-063-00
0.0068	→	1-161-049-00			
0.0082	1-161-012-00	1-161-050-00			
0.01	1-161-013-00	1-161-051-00			
0.012	→	1-161-052-00			
0.015	1-161-015-00	1-161-053-00			

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MYLAR CAPACITORS

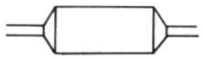
CAP. (μF)	RATING			CAP. (μF)	RATING			CAP. (μF)	RATING		
	50 VOLT.	100 VOLT.	200 VOLT.		50 VOLT.	100 VOLT.	200 VOLT.		50 VOLT.	100 VOLT.	200 VOLT.
	PART No.	PART No.	PART No.		PART No.	PART No.	PART No.		PART No.	PART No.	PART No.
0.001	1-108-227-00	1-108-365-00	1-108-409-00	0.01	1-108-239-00	1-108-377-00	1-108-421-00	0.1	1-108-251-00	1-108-389-00	1-108-433-00
0.0012	1-108-351-00	1-108-366-00	1-108-410-00	0.012	1-108-357-00	1-108-378-00	1-108-422-00	0.12	1-108-363-00	1-108-390-00	1-108-434-00
0.0015	1-108-228-00	1-108-367-00	1-108-411-00	0.015	1-108-240-00	1-108-379-00	1-108-423-00	0.15	1-108-252-00	1-108-391-00	1-108-435-00
0.0018	1-108-352-00	1-108-368-00	1-108-412-00	0.018	1-108-358-00	1-108-380-00	1-108-424-00	0.18	1-108-364-00	1-108-392-00	1-108-436-00
0.0022	1-108-230-00	1-108-369-00	1-108-413-00	0.022	1-108-242-00	1-108-381-00	1-108-425-00	0.22	1-108-254-00	1-108-393-00	1-108-437-00
0.0027	1-108-353-00	1-108-370-00	1-108-414-00	0.027	1-108-359-00	1-108-382-00	1-108-426-00	0.27	1-108-854-00	–	–
0.0033	1-108-232-00	1-108-371-00	1-108-415-00	0.033	1-108-244-00	1-108-383-00	1-108-427-00	0.33	1-108-855-00	–	–
0.0039	1-108-354-00	1-108-372-00	1-108-416-00	0.039	1-108-360-00	1-108-384-00	1-108-428-00	0.39	1-108-856-00	–	–
0.0047	1-108-234-00	1-108-373-00	1-108-417-00	0.047	1-108-246-00	1-108-385-00	1-108-429-00	0.47	1-108-857-00	–	–
0.0056	1-108-355-00	1-108-374-00	1-108-418-00	0.056	1-108-361-00	1-108-386-00	1-108-430-00				
0.0068	1-108-237-00	1-108-375-00	1-108-419-00	0.068	1-108-249-00	1-108-387-00	1-108-431-00				
0.0082	1-108-356-00	1-108-376-00	1-108-420-00	0.082	1-108-362-00	1-108-388-00	1-108-432-00				

TANTALUM CAPACITORS

RATING → : Use the high voltage rated one.

CAP. (μF)	3.15 VOLT.	6.3 VOLT.	10 VOLT.	16 VOLT.	20 VOLT.	25 VOLT.	35 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.01					→	→	1-131-396-00
0.015						→	1-131-397-00
0.022						→	1-131-398-00
0.033						→	1-131-399-00
0.047						→	1-131-400-00
0.068					→	→	1-131-401-00
0.1					→	→	1-131-402-00
0.15					→	→	1-131-403-00
0.22					→	→	1-131-404-00
0.33					→	1-131-409-00	1-131-405-00
0.47	–	–	–	–	1-131-412-00	→	1-131-406-00
0.68	–	–	–	1-131-415-00	→	1-131-410-00	1-131-407-00
1.0	–	–	1-131-418-00	–	1-131-413-00	→	1-131-408-00
1.5	–	1-131-421-00	–	1-131-416-00	→	1-131-411-00	1-131-348-00
2.2	1-131-424-00	–	1-131-419-00	–	1-131-414-00	1-131-355-00	1-131-349-00
3.3	–	1-131-422-00	–	1-131-417-00	1-131-362-00	1-131-356-00	1-131-350-00
4.7	1-131-425-00	–	1-131-420-00	1-131-369-00	1-131-363-00	1-131-357-00	1-131-351-00
6.8	–	1-131-423-00	1-131-376-00	1-131-370-00	1-131-364-00	1-131-358-00	1-131-352-00
10	1-131-426-00	1-131-383-00	1-131-377-00	1-131-371-00	1-131-365-00	1-131-359-00	1-131-353-00
15	1-131-390-00	1-131-384-00	1-131-378-00	1-131-372-00	1-131-366-00	1-131-360-00	–
22	1-131-391-00	1-131-385-00	1-131-379-00	1-131-373-00	1-131-367-00		
33	1-131-392-00	1-131-386-00	1-131-380-00	1-131-374-00			
47	1-131-393-00	1-131-387-00	1-131-381-00	–			
68	1-131-394-00	1-131-388-00	–	–			
100	1-131-395-00	–	–	–			

TANTALUM CAPACITORS



CAP. (μF)	RATING					
	3 VOLT.	6.3 VOLT.	10 VOLT.	16 VOLT.	20 VOLT.	35 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.033						1-131-273-00
0.047						1-131-274-00
0.068						1-131-275-00
0.1						1-131-276-00
0.15						1-131-277-00
0.22			–	–	1-131-262-00	1-131-278-00
0.33			–	–	1-131-263-00	1-131-279-00
0.47			1-131-169-00	–	1-131-264-00	1-131-280-00
0.68			–	1-131-258-00	1-131-265-00	1-131-281-00
1.0			1-131-254-00	–	1-131-266-00	1-131-282-00
1.5		1-131-250-00	–	–	1-131-267-00	1-131-283-00
2.2		–	–	1-131-259-00	1-131-268-00	1-131-284-00
3.3		–	1-131-255-00	–	1-131-269-00	–
4.7		1-131-251-00	1-131-171-00	–	1-131-270-00	–
6.8		–	–	1-131-260-00	1-131-271-00	–
10	–	–	1-131-256-00	–	1-131-272-00	–
15	–	1-131-252-00	–	1-131-261-00		
22	–	–	1-131-257-00	–		
33	1-131-176-00	1-131-253-00	1-131-173-00	–		
47	1-131-288-00	1-131-174-00	–	–		
100	1-131-177-00					

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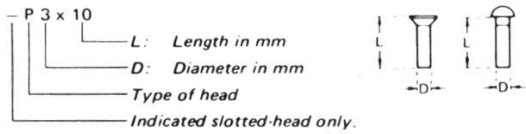
1/8 WATT CARBON RESISTOR

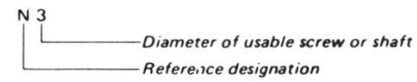
Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*	Ω	*Part No.*
2.0	—	13	1-246-821-00	91	1-246-831-00	620	1-246-841-00	4.3k	1-246-851-00	30k	1-246-861-00	200k	1-246-871-00
2.2	1-246-751-00	15	1-246-761-00	100	1-246-771-00	680	1-246-781-00	4.7k	1-246-791-00	33k	1-246-801-00	220k	1-246-811-00
2.4	—	16	1-246-822-00	110	1-246-832-00	750	1-246-842-00	5.1k	1-246-852-00	36k	1-246-862-00	240k	1-247-054-00
2.7	1-246-752-00	18	1-246-762-00	120	1-246-772-00	820	1-246-782-00	5.6k	1-246-792-00	39k	1-246-802-00	270k	1-247-046-00
3.0	—	20	1-246-823-00	130	1-246-833-33	910	1-246-843-00	6.2k	1-246-853-00	43k	1-246-863-00	300k	1-247-055-00
3.3	1-246-753-00	22	1-246-763-00	150	1-246-773-00	1.0k	1-246-783-00	6.8k	1-246-793-00	47k	1-246-803-00	330k	1-247-047-00
3.6	—	24	1-246-824-00	160	1-246-834-00	1.1k	1-246-844-00	7.5k	1-246-854-00	51k	1-246-864-00	360k	1-247-056-00
3.9	1-246-754-00	27	1-246-764-00	180	1-246-774-00	1.2k	1-246-784-00	8.2k	1-246-794-00	56k	1-246-804-00	390k	1-247-048-00
4.3	—	30	1-246-825-00	200	1-246-835-00	1.3k	1-246-845-00	9.1k	1-246-855-00	62k	1-246-865-00	430k	1-247-057-00
4.7	1-246-755-00	33	1-246-765-00	220	1-246-775-00	1.5k	1-246-785-00	10k	1-246-795-00	68k	1-246-805-00	470k	1-247-049-00
5.1	—	36	1-246-826-00	240	1-246-836-00	1.6k	1-246-846-00	11k	1-246-856-00	75k	1-246-866-00	510k	1-247-058-00
5.6	1-246-756-00	39	1-246-766-00	270	1-246-776-00	1.8k	1-246-786-00	12k	1-246-796-00	82k	1-246-806-00	560k	1-247-050-00
6.2	—	43	1-246-827-00	300	1-246-837-00	2.0k	1-246-847-00	13k	1-246-857-00	91k	1-246-867-00	620k	1-247-059-00
6.8	1-246-757-00	47	1-246-767-00	330	1-246-777-00	2.2k	1-246-787-00	15k	1-246-797-00	100k	1-246-807-00	680k	1-247-051-00
7.5	1-246-818-00	51	1-246-828-00	360	1-246-838-00	2.4k	1-246-848-00	16k	1-246-858-00	110k	1-246-868-00	750k	1-247-060-00
8.2	1-246-758-00	56	1-246-768-00	390	1-246-778-00	2.7k	1-246-788-00	18k	1-246-798-00	120k	1-246-808-00	820k	1-247-052-00
9.1	1-246-819-00	62	1-246-829-00	430	1-246-839-00	3.0k	1-246-849-00	20k	1-246-859-00	130k	1-246-869-00	910k	1-247-061-00
10	1-246-759-00	68	1-246-769-00	470	1-246-779-00	3.3k	1-246-789-00	22k	1-246-799-00	150k	1-246-809-00	1 M	1-247-053-00
11	1-246-820-00	75	1-246-830-00	510	1-246-840-00	3.6k	1-246-850-00	24k	1-246-860-00	160k	1-246-870-00		
12	1-246-760-00	82	1-246-770-00	560	1-246-780-00	3.9k	1-246-790-00	27k	1-246-800-00	180k	1-246-810-00		

HARDWARE NOMENCLATURE

Screw:



Nut, Washer, Retaining ring:



Reference Designation	Shape	Description	Remarks
		SCREWS	
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		braizer-head screw	

Reference Designation	Shape	Description	Remarks
		SELF-TAPPING SCREWS	
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
		SET SCREWS	
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
		NUT	
N		nut	
		WASHERS	
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
		RETAINING RINGS	
E		retaining ring	
G		grip-type retaining ring	

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